

5,740,161

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mentation an application services unit, discussed in more detail below, maintains a record of the current page being displayed for each of the applications being used in the conference which are being executed at the endpoint. Thus, by accessing this record, the present invention can readily determine the current page selected.

The present invention also determines the position in the page which is selected. In one embodiment, the view synchronization location is selected using a pointing device. The user selects a particular location for view synchronization, such as by depressing and releasing a mouse button when the pointer is over the desired location. The present invention, based on the coordinates of the selection, determines the location of that selection within the current page.

In one embodiment, the operating system of the endpoint maintains a record of each application being executed at the endpoint. This record includes a mapping of the display of the application on the display device to the physical memory locations which store the page. Thus, when a particular location of a document is selected, the present invention can readily determine, by sending a message to the operating system in a conventional manner, the location within the page which is selected.

Once the view synchronization location is determined, the local endpoint updates the viewed information to display the selected location, step 428. In one embodiment of the present invention, this updating is a centering process which centers the view synchronization location by determining an offset from the beginning of the page to the upper left-hand corner of the image being displayed when the selected location is displayed in the center of the display window. The present invention identifies a location within the page which should be in the upper left-hand corner of the display window in order for the selected view synchronization location to be in the center of the display window. The identification of this upper left-hand corner location is calculated in a conventional manner based on the selected view synchronization location and the size of the display window. Once the upper left-hand corner location is determined, an offset from the beginning of the page to the upper left-hand corner is determined in a conventional manner based on the size of the page and the position of the location within the page. The present invention then sends a message to the operating system to change the display

example, the image display may be adjusted so that the view synchronization location is displayed in the corner of the display window, at the top of the window, or any other location within the window.

Once the viewed information is centered, the local endpoint then sends a message to the other system, step 429. This message includes a page location which indicates the view location (that is, the selected point from the page).

The local endpoint then checks whether view synchronization confirmation messages have been received from each of the other endpoints in the conference, step 430. If an endpoint continues to check, step 430. If that the local endpoint can continue processing and instructions while waiting to receive message(s). Once a view synchronization message has been received from each of the other endpoints, the local endpoint provides that the view synchronization is complete, step 431.

In an alternate embodiment of the present invention, steps 430 and 431 are not performed by the local endpoint. In this embodiment, the view synchronization is completed at step 429; the local endpoint does not provide to the user that the view synchronization is complete.

In another alternate embodiment of the present invention, the centering step 428 is optional. In this embodiment, no adjustment of the view location is made at the local endpoint. For example, the view synchronization location may already be displayed by when the view synchronization location is determined. In this alternate embodiment because the desired location is already displayed.

In another alternate embodiment, the present invention includes a counter, timer, or similar mechanism to monitor the loop at step 430 corresponding to being received from all other endpoints. In this embodiment, if the counter expires then the loop at the local endpoint ends, by one implementation, the local endpoint provides (not shown) that the view synchronization is completed at all remote endpoints. Thus, the present invention can avoid the possibility of an infinite loop.

FIG. 5 is a flowchart showing the

US-PAT-NO: 5740161

DOCUMENT-IDENTIFIER: US 5740161 A

TITLE: Method and apparatus for synchronizing viewed information in a conferencing environment

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Detailed Description Text - DETX (13):

The computer system 300 generally comprises a processor-memory bus or other communication means 301 for communicating information between one or more processors 302 and 303. Processor-memory bus 301 includes address, data and control buses and is coupled to multiple devices or agents. Processors 302 and 303 may include a small, extremely fast internal cache memory (not shown), commonly referred to as a level one (L1) cache memory for temporarily storing data and instructions on-chip. In addition, a bigger, slower level two (L2) cache memory 304 can be coupled to processor 302 or processor 303 for temporarily storing data and instructions for use by the processor. In one embodiment, processors 302 and 303 are Intel.RTM. Architecture compatible microprocessors, such as i386.TM., i486.TM., or Pentium.RTM. processors. However, the present invention may utilize any type of microprocessor, including different types of processors.

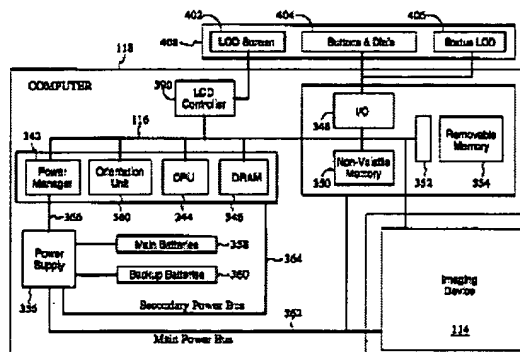
Detailed Description Text - DETX (57):

Conference application layer 705 includes conference manager 725 and multiple applications 730. Conference manager 725 provides a conferencing interface to the user of the end point. In one embodiment, the conferencing interface is a graphical user interface (GUI). In one implementation, conference manager 725 includes options, such as through a menu, which allows the end point user to add or delete applications to the conference.

United States Patent
Anderson[11] Patent Number: **5,973,734**
[45] Date of Patent: **Oct. 26, 1999****[54] METHOD AND APPARATUS FOR CORRECTING ASPECT RATIO IN A CAMERA GRAPHICAL USER INTERFACE****[57] Inventor:** Eric C. Anderson, 840 Jew, Calif.
[72] Assignee: FluidPath Technology, Inc., San Jose, Calif.**[21] Appl. No.:** 08/891,044
[22] Filed: July 5, 1997**[31] Int. Cl.:** H04N 5/228
[32] U.S. Cl.: 348/239; 348/222
[36] Field of Search: 348/239, 348/222, 348/234, 353, 356, 36, 97, 98, 463, 516, 315/211, 373, 374; 350/513, 527, 909.1, 407; 343/132, 134, 135; 382/224, 234; 104/91, 5/228**[56] References Cited**
U.S. PATENT DOCUMENTS5,448,572 01/1995 Aronson et al. 348/239, 348/222
5,619,728 01/1997 Pincus et al. 348/239, 348/222**Primary Examiner:** Chris V. Ho
Attorney Agent: of Pines, Aronson & Associates**[57] ABSTRACT**

A method and system for correcting the aspect ratio of images captured by a digital camera is disclosed. In operation, the method and system include determining if an image requires cropping, decompressing the image, cropping the image if the image requires cropping, compressing the image if the image requires cropping, and providing the image to a display. In another aspect, the method and system include cropping an image to a predetermined shape and providing the data to a display buffer.

18 Claims, 11 Drawing Sheets



it to fit on the LCD 402. Whether or not to decompress and display the compressed image data 604 depends on the resolution of the display and the resolution of the screenrail images 608.

Detailed Description Text - DETX (27):

The raw image data is then used to generate an enhanced image file 600 for the captured image including the compressed image data 604, the thumbnail 606, and the screenrail 608, as shown in FIG. 6.

Detailed Description Text - DETX (28):

When generating the thumbnail and screenrail images 606 and 608, the present invention takes advantage of the fact that the YCC data in the frame buffers 536 has already been processed by the live view generation process 612 and stored at the reduced resolution of the LCD screen 402. Since the thumbnail and screenrail images 606 and 608 are also intended to be lower-resolution representations of the captured image, the previously processed YCC data in the frame buffers 536 is used to generate the thumbnail 606 and screenrail 608 directly, rather than using the raw image data stored in the input buffers 538.

Detailed Description Text - DETX (29):

To generate the screenrail image 608, the YCC data in the frame buffers 536 is converted from YCC 222 format into YCC 422 format and compressed by a conversion and compression process 614. To generate the thumbnail image 606, the YCC data in the frame buffers 536 is converted from the YCC 222 format into YCC 422 format and then resized by a conversion and resizing process 616. During the conversion and resizing process 616, the thumbnail image 606 may be resized by averaging in which a block of pixel values from the YCC 422 data are averaged to represent one pixel value of the thumbnail image

United States Patent

Anderson

Patent Number: 5,973,734
Date of Patent: Oct. 26, 1999

[34] METHOD AND APPARATUS FOR
CORRECTING ASPECT RATIO IN A
CAMERA GRAPHICAL USER INTERFACE

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[72] Assignee: FluidPoint Technology, Inc., San Jose, Calif.

[21] Appl. No.: 08/931,404

[22] Filed: Jul 9, 1997

[23] Int. Cl.:

[24] U.S. Cl.:

[36] Field of Search:

[36] References Cited
U.S. PATENT DOCUMENTS

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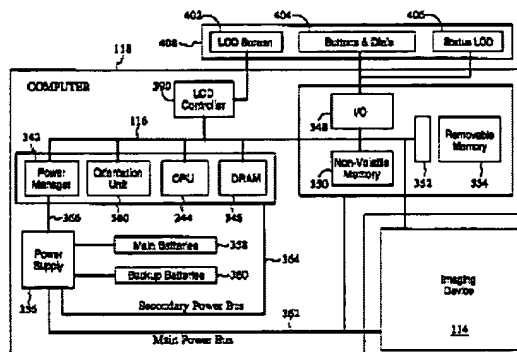
Primary Examiner—Gina V. Ho

Attorney Agent, of Post-Response & Associates

[37] ABSTRACT

A method and system for correcting the aspect ratio of images captured by a digital camera is disclosed. In one aspect, the method and system include determining if an image requires cropping, decompressing the image, cropping the image if the image requires cropping, and supplying the image to a display. In another aspect, the method and system include cropping an image to a predetermined shape and providing the data to a display buffer.

19 Claims, 13 Drawing Sheets



The raw image data is then used to generate an enhanced image file 600 for the captured image including the compressed image data 604, the thumbnail 606, and the scrennail 608, as shown in FIG. 6.

Detailed Description Text - DETX (28):

When generating the thumbnail and scrennail images 606 and 608, the present invention takes advantage of the fact that the YCC data in the frame buffers 536 has already been processed by the live view generation process 612 and stored at the reduced resolution of the LCD screen 402. Since the thumbnail and scrennail images 606 and 608 are also intended to be lower-resolution representations of the captured image, the previously processed YCC data in the frame buffers 536 is used to generate the thumbnail 606 and scrennail 608 directly, rather than using the raw image data stored in the input buffers 538.

Detailed Description Text - DETX (29):

To generate the scrennail image 608, the YCC data in the frame buffers 536 is converted from YCC 222 format into YCC 422 format and compressed by a conversion and compression process 614. To generate the thumbnail image 606, the YCC data in the frame buffers 536 is converted from the YCC 222 format into YCC 422 format and then resized by a conversion and resizing process 616. During the conversion and resizing process 616, the thumbnail image 606 may be resized by averaging in which a block of pixel values from the YCC 422 data are averaged to represent one pixel value of the thumbnail image 606, and/or by sub-sampling the YCC 422 data in which only a certain number of pixels in a block are used to represent one pixel in the thumbnail image 606.

Detailed Description Text - DETX (30):

Referring now to FIGS. 5A, 6 and 7, after the thumbnail image 606 and the

